



TDCJ Risk Management's Training Circular

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Risk Management Issues

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May Hot Weather



Summer time in Texas is symbolic of our state. From the dry desert heat of West **Texas**, to the muggy humid East Texas, one thing is for sure, it's **HOT!** Extreme heat in the workplace can pose serious health and safety issues.

Every reasonable effort should be made in the interest of preventing heat related injuries in the workplace. Problems of heat stress are more common than those prevented by very cold environments.

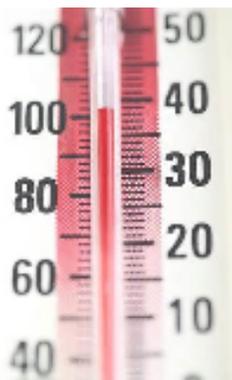
Heat stress is best prevented by acclimatizing staff and offenders to working under hot and humid climate conditions, assuring adequate fluid intake and, to a lesser extent, assuring adequate salt intake.

Proper treatment of heat stress should begin at the worksite, but severe heat stress is a medical emergency which must be treated in a medical facility.

EXTREME HEAT

Workers can suffer heat-related injuries, illnesses, and even death when the body's temperature control system is overloaded. Normally, the body cools itself by sweating, but under some conditions just sweating is not enough.

When a person's body temperature rises rapidly their vital organs are threatened. In a typical year about 175 Americans succumb to heat. Heat kills more people each year in the United States than tornadoes, floods, hurricanes, or lightning.



HEAT STRESS FACTORS

For the human body to maintain a constant internal temperature, the body must rid itself of excess heat. This is achieved primarily through varying the rate and amount of blood circulation to the outer layers of the skin and releasing of fluid onto the skin by the sweat glands.

The evaporation of sweat cools the skin, releasing large quantities of heat from the body. As area temperatures approach normal skin temperature, cooling of the body becomes more difficult.

If air temperature is as warm or warmer than the skin, blood brought to the body surface cannot lose its heat, and sweating becomes the primary means of maintaining a constant body temperature.

Sweating does not cool the body unless the moisture is removed from the skin by

evaporation. Under conditions of high humidity, the evaporation of sweat from the skin is decreased and the body's efforts to maintain acceptable body temperature may be significantly impaired

HEAT STRESS SAFETY HAZARDS

The frequency of accidents in general appears to be higher in hot environments than in more moderate temperatures. Heat tends to promote accidents that occur because of sweaty palms, dizziness, or the fogging of safety glasses. Employees can get burned from accidental contact with hot materials such as steam or metal surfaces.

Mental confusion, tiredness, and irritability may occur when an employee becomes overheated. The effect of these conditions can result in poor judgment and unsafe practices.

TYPES OF HEAT-RELATED ILLNESSES

Heat Cramps: usually develop following strenuous exercise, in muscles that have been subjected to extensive work. The pain is brief, intermittent and crampy, and may be quite severe. Heat cramps usually occur after several hours of work, and may occur even at low ambient temperatures.

The cause is inadequate replacement of electrolytes (sodium and potassium).



Treatment consists of rest in a cool place and replacement of fluids and electrolytes, by drinking cool, caffeine-free fluids and eating a meal.

Prevention is accomplished by ample fluid intake during and after work, and salting of food during meals if not medically contraindicated. Use of electrolyte replacement drinks or lightly salted fruit drinks at the worksite may also be beneficial.

Heat Exhaustion (Heat Prostration):

the most common form of heat stress, caused by depletion of water and salt. Symptoms include weakness, anxiety, fatigue, thirst, dizziness, headache, nausea



and urge to defecate. Signs include profuse perspiration, rapid pulse, in coordination and confusion.

Heat prostration may lead to **heat syncope**, a sudden onset of collapse that is usually of brief duration. During heat syncope the patient appears ashen gray and skin is cool and clammy. Failure to treat heat exhaustion may result in progression to heat stroke. Risk factors include failure to maintain adequate fluid intake during exertion, and taking diuretics.

Treatment is to remove the person to a cool area, having them lie down, remove shirt and shoes, begin oral rehydration. Some cases may require intravenous fluid replacement.



Prevention is accomplished by ample fluid intake during work, proper work-rest cycles, and salting of food during meals if not medically contraindicated.

Heat Stroke: is a medical emergency. While it may be preceded by signs of heat exhaustion, the onset is often

sudden. In heat stroke the body has lost its ability to dissipate heat and maintain a normal body temperature. Body temperature is often elevated over 106°F.

Exertional heat stroke occurs in young, healthy people who maintain inadequate fluid intake during exertion. Signs include headache, chills, gooseflesh, weakness, in coordination, nausea and vomiting, progressing to unconsciousness.

Classical heat stroke is seen in the elderly, those with predisposing medical conditions such as congestive heart failure, diabetes and alcoholism, and those on medications which cause fluid depletion, interfere with sweating or interfere with the body's thermoregulatory system.

Classical heat stroke has few premonitory signs. Collapse may be among the first symptoms. Skin is hot and dry, and pulse is rapid and weak. Shock and death may occur in either type of heat stroke.



Treatment is a medical emergency. The patient must be removed to a cool, air-conditioned place, stripped and cooled rapidly using a water spray and cooling fans.

Prevention includes ample fluid intake during work, proper work-rest cycles, excluding people at high risk from working under conditions of extreme heat and humidity, and maintaining adequate indoor conditions, such as access to cool fluids and use of cooling fans, for persons at increased risk for heat stroke.

The key to all heat related illness is PREVENTION.

HEAT RASH

Heat Rash - Heat rash is a skin irritation caused by excessive sweating during hot, humid weather. It can occur at any age but is most common in young children.

Recognizing Heat Rash - Heat rash looks like a red cluster of pimples or small

blisters. It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

What to Do - The best treatment for heat rash is to provide a cooler, less humid environment. Keep the affected area dry. Dusting powder may be used to increase comfort.

Treating heat rash is simple and usually does not require medical assistance. Other heat-related problems can be much more severe.

SUN SAFETY

People who spend a lot of time outdoors run the risk of suffering from more than just heat exhaustion or heat stress.



Repeated exposure to ultraviolet (UV) radiation places them at risk for various forms of skin cancer and eye diseases, such as cataracts. The number of skin cancer cases in the United States continues to increase each year.

The sun's rays are most in-



tense and damaging during the summer months. The greatest exposure occurs from 10:00 a.m. until 4:00 p.m., but you can still get a sunburn during cloudy weather, other seasons, and other times of the day.

The areas of the body most at risk to exposure to UV radiation are the back of the neck, ears, face, eyes, and arms.

These and other body parts can be easily protected by wearing proper clothing, sunglasses, and sunscreen. You can reduce your risk by taking precautions and avoiding repeated exposure to the sun.

AD-10.64

Fortunately, the Agency recognizes the very real hazards associated with working within such temperature extremes and has taken proactive measures to protect staff.

So much in fact, that this medical issue has an Administrative Directive devoted to it. AD-10.64 is the Agency's policy addressing temperature extremes in the TDCJ workplace.

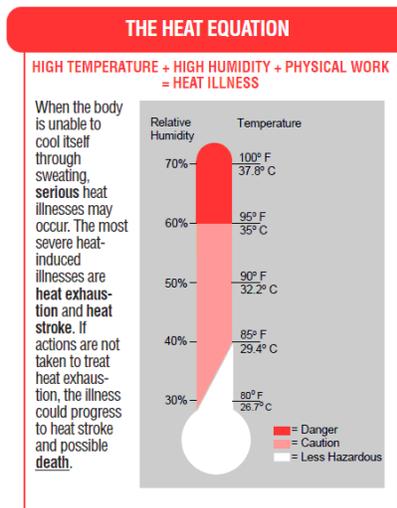
The last page of AD-10.64 contains the Heat and Humidity Matrix, as well as preventive steps to take when the apparent or 'feels like' temperature reaches varying levels of severity.

According to the matrix, which is adopted from the National Weather Service, a person can begin to feel the effects of heat exhaustion in temperatures as low as 80°.

Risks for heatstroke begin at temperatures of 91°. At 95°, there can be an imminent danger of developing heatstroke.

Bear in mind, these risk factors are accompanied by extremely high humidity levels.

- TDCJ, AD-10.64, Temperature Extremes in the TDCJ Workplace



REFERENCES:

- TDI, DWC, Workplace Safety, HS99-151B
- CMHC, Heat Stress, B-15.2
- TDI, DWC, Heat-Related Injury & Illness Prevention Factsheet, HS04-047B
- TDI, DWC, Sun Safety, HS96-096E
- CDC, Emergency Preparedness & Response, Extreme Heat

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